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—E. B. COPELAND (Philippine Jour. Sci. 1:143-166. pls. 28. 1906) has described 47 new species and 2 new genera (*Acrosorus* and *Thayeria*) of Philippine ferns. —SPENCER LE M. MOORE (Jour. Botany 44:217-224. 1906) has described 2 new genera of Acanthaceae from Madagascar, *Melittacanthus* and *Amphiestes*. —BUNZO HAYATA (Jour. Linn. Soc. Bot. 37:330. pl. 16. 1906) has described a new genus (*Taiwania*) of conifers from the Island of Formosa, belonging to the Taxodiaceae and nearest to Cunninghamia. —EDITH M. FARR (Ottawa Nat. 20:105-111. 1906) has described new species from the Canadian Rockies and Selkirks under Pachystima (4), Arnica, Hieracium, Dryas, and Ranunculus. —O. STAPP (Kew Bulletin 1906:204) has published a new genus (*Diandrollyra*) of grasses whose native country is unknown. —O. E. JENNINGS (Annals Carnegie Mus. 3:480-485. 1906) has published new species under Kneiffia and Ibidium (Spiranthes) from Pennsylvania. —V. F. BROTHERUS (Hedwigia 45:271. 1906) has described a new genus (*Ulebryum*) of Pottiaceae from Peru. —F. LAMSON-Scribner (Rhodora 8:137-146. 1906) has included in a newly named genus (*Sphenopholis*) the grasses that have been referred for many years to *Eatonia* Raf., recognizing 7 species. —W. H. BLANCHARD (*idem* 146-157) has described 5 new blackberries (Rubus) from Maine. —R. SCHLECHTER (Engler's Bot. Jahrb. 38:137-143. 1906) has described two new African genera (*Afrothismia* and *Oxygyne*) of Burmanniaceae. —J. C. ARTHUR and F. D. KERN (Bull. Torr. Bot. Club 33:403-438. 1906), in a revision of the N. Am. species of Peridermium, recognize 30 species, 10 of which are described as new. —K. K. MACKENZIE (*idem* 439-443) has described 4 new species of Carex. —LEROY ABRAMS (*idem* 445-446) has described 2 new southwestern species of Pentstemon. —J. M. C.

Japanese Experiment Station Bulletin.—A new departure in experiment station publications had been inaugurated by Professor HOZAI of the Imperial Central Agricultural Experiment Station of Tokio. In order to make the results of work carried on in the experiment stations of Japan accessible to investigators of other countries, a periodical Bulletin will be issued in which all work that may be of general interest will be published. The experimental system of Japan comprises 47 stations, whose work will in large part become available to the world through the publication of this Bulletin, printed partly in English and partly in German. The first number⁸ contains 11 articles, some of which are briefly noted here to show the scope of the publication. S. MACHIDA reports on the influence of dilute solutions (0.3%) of Ca and Mg salts on the putrefactive action of bacteria. The rate of putrefaction was determined by the quantity of NH₃ formed in urine and in pepton solutions to which the salts had been added. It was found that the Ca-salts retard putrefaction, while Mg-salts favor the process.

Several articles of agronomic interest are given by G. DAIKUHARA on the correction of an unfavorable ratio of lime to magnesia, also on the lime factor

⁸ The Bulletin of the Imperial Central Agricultural Experiment Station, Japan. Vol. I. No. 1. pp. 94. pls. 13. Nishigahara, Tokio. December 1905.

for the tobacco plant, and on the application of magnesia in the form of magnesium sulfate for the rice plant. UYEDA gives an extended account of a new phytopathological bacterium (*Bacillus Nicotianae*) which produces a serious disease known as stem-rot and black-leg of tobacco. HORI gives an account of a smut on the cultivated bamboo. The fungus attacks the young internodes of growing branches, and as it may infect these at any time during the growing season, whole forests of bamboo often become infected. As the bamboo furnishes material for building as well as for household utensils and fences, the damage thus caused is considerable. The fungus is referred to *Ustilago Shiriana* P. Henn.—H. HASSELBRING.

Respiratory enzymes.—PALLADIN announces his adherence to the theory of BACH and CHODAT, that normal respiration depends upon the presence of 1) oxidizable substance and 2) two enzymes, whose mixture was formerly designated oxidase, *a*) oxygenase, which has, attached to various radicals, the characteristic peroxid or hydroperoxid group O·O or O·OH and serves to transfer O₂, and *b*) peroxydase, which is a catalyser and renders active the oxygenase. When oxidative processes do not occur it is because one or two of the three are wanting. The less stable oxygenases, and those which with water quickly become hydroperoxids, are used up promptly, giving rise to some of the respiratory CO₂; so that often tests do not show any "oxidase" present in plant parts; but the peroxidases, which are very stable, can always be found.

From his researches PALLADIN concludes⁹ that the prevalence of one or the other enzyme is connected with the stage of development of the plant. For anaerobic respiration prevails in embryonal organs and in lower plants, which alone are capable of anaerobic life. In the embryonal stage oxygenase is at a minimum, increasing with the passage into active life, and diminishing in organs which have ceased to grow.

MISS KRASNOSSELSKY,¹⁰ working under PALLADIN'S direction, finds in frozen onions and their sap no oxygenase, but peroxydases whose quantity increases with respiratory activity, if H₂O₂ be supplied, and continues to do so even when respiration falls. Katalase, however, is present in the sap after the freezing.

These researches are more and more justifying the opinion that the origin of "respiratory" CO₂ is very complex, and that more than one catalyser is taking part in the dissociation.—C. R. B.

Ancient history of ferns.—ARBER¹¹ has brought together the recent development of knowledge in reference to the history of ferns in a short paper that brings

⁹ PALLADIN, W., Bildung der verschiedenen Atmungsenzyme in Abhängigkeit von dem Entwicklungsstadium des Pflanzen. Ber. Deutsch. Bot. Gesells. 24:97-107. 1906.

¹⁰ KRASNOSSELSKY, T., Bildung der Atmungsenzyme in verletzten Zwiebeln von *Allium Cepa*. Ber. Deutsch. Bot. Gesells. 24:134-141. 1906.

¹¹ ARBER, E. A. NEWELL, On the past history of ferns. Annals of Botany 20: 215-232. 1906.